

REMARKS

In view of the above amendments and the following remarks, reconsideration of the objections and rejections set forth in the Office Action of October 24, 2005 is respectfully requested.

The Examiner objected to the title of the invention as not being sufficiently descriptive. As a result, the title of the invention has now been changed as indicated above, and it is submitted that the new title clearly indicates the invention to which the claims are directed. Consequently, it is respectfully submitted that the Examiner's objections to the title has been overcome.

The Examiner rejected elected claims 1 and 2 as being unpatentable over the Uzoh reference (USP 6,113,769) in view of the Applicants' Admitted Prior Art (AAPA). However, as indicated above, the original claims have now been cancelled and replaced with new claims 5-10, and it is submitted that all of the new claims read on the elected invention. Furthermore, for the reasons discussed below, it is submitted that the new claims are clearly patentable over the prior art of record.

A discussion of the present invention as recited in new claims 5-10 will now be provided with reference to various portions of the present application. However, reference to these portions of the application is provided only for the Examiner's benefit, and it is not intended to otherwise limit the scope of the claims to any specific embodiments set forth in the application.

The present invention as recited in new independent claim 5 is described in the specification in, for example, paragraph [0031] and paragraphs [0059] through [0063]. In particular, the method comprises sampling a plating liquid, analyzing components of the sampled plating liquid, and replenishing the plating liquid with component replenishing liquids based on the results of the analyzing. The component replenishing liquids each include a standard liquid and a plurality of solutions. Each of the solutions includes a basic liquid including copper sulfate and sulfuric acid, and includes *one* of a plurality of different types of additives. The standard liquid includes the basic liquid, the plurality of different types of additives, and *hydrochloric acid*. As a result of managing the plating liquid as recited in new independent claim 5, the

concentration of the components in the plating liquid can be managed more strictly.

Consequently, it is possible to produce uniform and homogeneous films of plated copper so as to provide reliable copper interconnections (see paragraph [0070]).

The Uzoh reference is directed to an apparatus for monitoring and adding plating solution, including sampling a plating liquid using a sensor or monitor 31, and analyzing the condition of a plating bath using a controller 33. However, as acknowledged by the Examiner on page 3 of the Office Action, the Uzoh reference does not teach or even suggest replenishing the plating liquid with component replenishing liquids including a standard liquid and a plurality of solutions with a basic liquid.

Nonetheless, the Examiner asserted that the Applicant “admits as prior art” various solutions added to plating solutions in order to maintain the proper electrolyte chemistry. However, the Applicants respectfully disagree with the Examiner’s assertion, and submit that the Applicants did not admit prior art that teaches or even suggests the composition of the component replenishing liquids having a composition as recited in new independent claim 5.

As an initial matter, despite the Examiner’s assertion that the Applicants admitted that the discussion set forth in paragraphs [0002]-[0006] of the present specification constitutes prior art, the Applicants made no such admission. Instead, the Applicants merely described this section of the specification as “Background Art.” Moreover, the Applicants never identified any of the subject matter discussed in this section of the specification as constituting prior art (see MPEP Chapter 2129). Therefore, contrary to the Examiner’s assumption, it is submitted that the discussion set forth in paragraphs [0002] through [0006] of the specification does not constitute prior art admitted by the Applicants.

Nonetheless, even *if* the subject matter discussed in the “Background Art” section of the specification is considered to be prior art, the composition of the component replenishing liquid as recited in new independent claim 5 is not disclosed or even suggested in this section of the specification. For example, although the Examiner asserted that the Background Art section of the specification teaches that the solutions added to a plating liquid can include hydrochloric acid, there is *no mention* of hydrochloric acid *anywhere* in the Background Art section of the

specification. Moreover, the Background Art section does not disclose or suggest a plurality of solutions each including a basic liquid including copper sulfate and sulfuric acid, and one of a plurality of different types of additives. Furthermore, the Background Art section also does not disclose or suggest that a standard liquid includes the basic liquid, the plurality of different types of additives, and hydrochloric acid. Thus, even *if* the Background Art section of the present application constitutes prior art as suggested by the Examiner, there is no teaching or suggestion of the composition of the component replenishing liquids as recited in new independent claim 5.

As explained above, the Background Art section of the present invention does not constitute prior art as asserted by the Examiner. Moreover, even if the Background Art section of the specification *did* constitute prior art, the Uzoh reference and the Background Art section do not, either alone or in combination, disclose or even suggest the composition of the component replenishing liquids as recited in new independent claim 5. Therefore, one of ordinary skill in the art would not be motivated by the Background Art section to modify the Uzoh reference so as to obtain the invention recited in new independent claim 5. Accordingly, it is respectfully submitted that new independent claim 5 and the claims that depend therefrom are clearly patentable over the prior art of record.

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance. However, if the Examiner should have any comments or suggestions to help speed the prosecution of this application, the Examiner is requested to contact the Applicant's undersigned representative.

Respectfully submitted,

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